

### **REMARKS / ARGUMENTS**

Claims 32-44 remain in this application. Claims 1-31 are canceled, without prejudice.

In the above-identified Office Action, the Examiner allowed claims 33-35 and 42-44.

#### **Lack of New Matter in Amendment**

Applicants submit that the above amendment to present claim 32 does not introduce new matter. The present specification, p. 7, lines 12-13, discloses suspension polymerization as one of the methods by which PVC may be manufactured. Further, at least two of the PVC resins used in the Examples of the present specification are made by suspension polymerization: SH 6830 (Table 10, p. 40) and Oxy 185 (Table 15, p. 44). Documentation showing that these two resins are made by suspension polymerization are attached hereto.

#### **Response to rejection of claim 32 over GB '185**

In the above-identified Office Action the Examiner rejected claims 32 and 35-39 under 35 USC §102(b) as being anticipated by GB 1,230,185 ("GB'185"). The Examiner stated, "While the reference may not explicitly teach the incorporation of the latex modifier into a powder of polyvinyl chloride, it is the position of the examiner that there would be no patentably distinct properties between the resulting compositions."

Applicants note that, in previous papers regarding the present application, Applicants have established that GB'185 teaches only two kinds of blends of additive with resin: those made by blending powder-form additive with powder-form resin ("powder/powder blends") and those made by blending liquid-form additive with liquid-form resin ("liquid/liquid blends"). Applicants further established in the previous papers that the compositions of the present invention are novel over the powder/powder compositions disclosed by GB'185. Thus, the current issue is whether the compositions

of the present invention are novel over the liquid/liquid compositions disclosed by GB'185.

Applicants respectfully submit that currently amended claim 32 recites compositions that are distinct from all compositions taught by GB'185, including the liquid/liquid blends taught by GB'185. As set forth in more detail below, GB'185 teaches liquid/liquid blend methods that cannot be used on suspension-polymerized poly(vinyl chloride) ("PVC"), and therefore GB'185 does not teach liquid/liquid blends that contain suspension-polymerized PVC. Also, suspension-polymerized PVC is a unique material that has different properties from PVC made by other methods. Thus, the compositions taught in GB'185 are separate from the compositions recited in currently amended claim 32, and so currently amended claim 2 is novel over GB'185.

1. The methods of GB'185 cannot be used on suspension-polymerized PVC

Regarding liquid/liquid blends, GB'185 teaches that latex additive can be blended with PVC, "and the resulting blend is subjected to salting out or acid precipitation or is spray dried to produce a blended resin composition" (col. 3, lines 19-23). Applicants submit that this teaching of GB'185 is limited to those liquid forms that can be spray dried, salted out, or acid precipitated.

As set forth in detail immediately below, Applicants submit that the methods taught by GB'185 apply to Latex PVC and not to Suspension PVC.

PVC is normally available in a liquid form either in the form of a latex or in the form of a suspension. The distinctions between latex PVC and suspension PVC are well known in the art, as described, for example, by M. Clark in "Particle Formation," which is Chapter 1 of Particulate Nature of PVC, edited by G. Butters, Applied Science Publishers Ltd., London, 1982. (The passages of Clark that are cited herein have been copied and attached hereto.)

Latex PVC is made by emulsion polymerization, which is carried out either by conventional emulsion polymerization or by microsuspension polymerization (Clark p. 32, lines 17-19). The word "latex" is used to mean PVC made by either conventional

emulsion polymerization or by microsuspension polymerization (see, for example, Clark p. 2, line 13; and Clark p. 45, line 22).

The particles of latex PVC are dispersed in water, and the dispersion is stabilized by emulsifier. Clark teaches that "the emulsifier system is of fundamental importance in the emulsion and microsuspension polymerisation process" (p. 37, lines 33-34). Clark teaches that anionic surfactants are used as emulsifier, with or without additional compounds called "cosurfactants," both for emulsion polymerization (p. 39, lines 5-12) and for microsuspension polymerization (p. 41, lines 21-25).

Latex PVC, in the liquid latex form, has PVC polymer particles with size 0.1 to 2 micrometer (Clark, p. 1, line 15).

One method of turning latex PVC into solid powder PVC is spray drying (Clark, p. 1, lines 16-19). Spray drying produces PVC powder particles with mean size of 40 to 50 micrometers, with a wide distribution of powder particle sizes (Clark, p. 37, lines 16-21). The maximum particle size in spray-dried PVC is 100 micrometer (Clark, p. 48, line 3). Those of ordinary skill in the art recognize that this upper limit is determined by the maximum droplet size emerging from the spray nozzle; this maximum droplet size is only slightly larger than 100 micrometer.

Another method of turning latex PVC into solid powder PVC is coagulation (Clark, p. 37, line 14). Coagulation processes are well known in the art. Common methods of coagulation involve adding salt or acid to the latex. It is well known that these methods work by compressing or destroying the layer of ions that surround each latex particle. That layer of ions is created by the presence of anionic surfactant on the surface of the particle. Thus, it is well known that "salting out" and "acid precipitation" are methods that operate on latex particles that are stabilized by ions, in this case ions that are present because of the anionic surfactant that is used as the emulsifier.

In contrast, suspension PVC is made by a different process, has different particle size, and has particles that are stabilized with compounds other than anionic surfactants. Suspension PVC is made by suspension polymerization. The product of the polymerization is a suspension in water of PVC granules (called "Stage III particles" by Clark) with a mean particle size of 100-150 micrometers (Clark, p. 1, line 12). The PVC

suspension is stabilized by a dispersant that is normally a water soluble organic polymer, usually a cellulosic polymer or a poly(vinyl alcohol) polymer (Clark, p. 13, lines 13-14).

The granules of suspension PVC are too large to pass through the nozzle of a spray dryer properly. Thus, suspension PVC cannot be processed by spray drying.

The compounds that stabilize the dispersion in suspension PVC operate by water solubility of neutral organic compounds, and they do not operate by the creation of a layer of ions. Thus, neither salting out nor acid coagulation will operate on suspension PVC.

The methods disclosed by GB'185 (spray drying, salting out, and acid precipitation) do not operate on suspension PVC. Therefore, Applicants submit that the compositions taught by GB'185 do not include suspension PVC.

## 2. Material differences between Suspension PVC and Latex PVC

Suspension PVC and Latex PVC differ from each other in a variety of ways and are used for different purposes. The following discussion illustrates one example of how the different polymerization methods produce PVC resins that have different properties, require different processing methods, and are used for different purposes.

For example, the particles of suspension PVC are known to be porous (Clark, p. 1, line 19). The importance of this porosity is well known, as explained, for example by G.C. Portingell, in "Processing Properties," which is Chapter 4 of Particulate Nature of PVC, edited by G. Butters, Applied Science Publishers Ltd., London, 1982. (The passages of Portingell that are cited herein have been copied and attached hereto.)

In some uses of PVC that require plasticizer, the plasticizer is blended with the PVC during a melt/mixing operation (e.g., extrusion, injection molding, or calendering). In such operations, the polymer should absorb plasticizer quickly and in large amounts (Portingell, p. 178, lines 15-17). For these uses, suspension PVC resins are used (Portingell, p. 178, line 27).

In other uses of PVC that require plasticizer, PVC and plasticizer are mixed at low temperature to form a paste. In such cases, it is desirable that the PVC resin does not readily absorb plasticizer, and a PVC resin with different properties is needed (Portingell,

p. 178, lines 28-34). Portingell teaches, "Paste forming resins are manufactured by the emulsion or microsuspension polymerization route" (p. 187, lines 31-32).

In sum, the difference in porosity illustrates that suspension PVC and latex PVC have different properties and cannot be freely interchanged for each other.

#### Summary

Applicants submit that the teachings of GB'185 regarding mixing of liquid additive with liquid resin are limited to compositions in which the PVC resin is not suspension-polymerized PVC. In contrast, the PVC recited in currently amended claim 32 is suspension-polymerized PVC. Applicants submit that suspension-polymerized PVC is a distinct material from the latex PVC disclosed by GB'185. Therefore, Applicants submit that the compositions recited in currently amended claim 32 are distinct from the compositions disclosed by GB'185, and thus currently amended claim 32 is novel over GB'185.

#### Response to rejection of claim 40 over GB '185 and Ludwig

In the above-identified Office Action the Examiner rejected claim 40 under 35 USC §103(a) as being obvious over GB'185 in view of US 5,780,549 ("Ludwig"). The Examiner stated that it would have been obvious to "incorporate common adjuvants as taught by the secondary reference into the composition of the primary reference."

As discussed herein above, Applicants submit that the compositions recited in currently amended claim 32 are not taught by the primary reference (i.e., GB'185). The teachings of Ludwig regarding additional adjuvants do not address the differences between the compositions of currently amended claim 32 and the compositions taught by GB'185. Therefore, Applicants submit that present claim 40 is not obvious over GB'185 in view of Ludwig.

Claims 35-39 and 36-41

Present claims 36-41 are dependent on currently amended claim 32. Applicant has argued herein above that currently amended claim 32 is novel over GB'185, and so Applicant further submits that present claims 36-41 are also novel over GB'185.

Inclusion of Translation

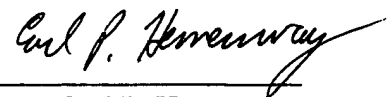
Document EP 0 890 593 was listed in an Information Disclosure Statement that was submitted by Applicants on August 17, 2005. An English translation has become available, and a copy of that translation is submitted herewith, as a courtesy to the Examiner.

Conclusion

In view of the foregoing amendments and arguments, Applicants respectfully request the Examiner to reexamine the claimed subject matter, to withdraw the rejections of the claimed subject matter and to allow claims 32-44 at this time. If, however, there remain any open issues which the Examiner believes can be resolved by a telephone call, the Examiner is cordially invited to contact the undersigned agent.

No fees are believed to be due in connection with the submission of this amendment; however, if any such fees, including petition or extension fees, are due, the Commissioner is hereby authorized to charge them, as well as to credit any overpayments, to Deposit Account No. 18-1850.

Respectfully Submitted,



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